

**Notice of Allowability**

Application No.

10/799,451

Applicant(s)

ARNSTEIN ET AL.

Examiner

Art Unit

Ryan F. Pitaro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/22/2005.
2. ☒ The allowed claim(s) is/are 1-13 and 15-28.
3. ☒ The drawings filed on 11 March 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 4/27/2005
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 7/5/2005.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

*Kristine Kincaid*  
KRISTINE KINCAID  
SUPERVISOR, PATENT EXAMINER  
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### DETAILED ACTION

1. Claims 1-13, 15-28 have been examined.

### EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Frank Abramonte on July 5<sup>th</sup> 2005. The application has been amended as follows:

Claims have been amended as follows:

1. (Currently Amended) A method executing on a processor employing digital models of flow processes, the method comprising: creating digital representations creating digital representations of at least two hierarchical nodes, each of the hierarchical nodes having associated therewith a respective dimensionality defining a number of dimensions of the respective hierarchical node, the respective dimensions of each of the hierarchical nodes having a defined order with respect to one another, each dimension having an associated

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size defining a number of members of the respective dimension; creating digital representations of a number of hierarchical edges defining connections between at least some of the hierarchical nodes, at least a first one of the hierarchical edges defining a connection between a first and a second one of the at least two hierarchical nodes; and for each of a number of pairs of hierarchical nodes connected by a respective shared one of the hierarchical edges, associating at least one of a number of match rules with the pair of hierarchical nodes, each of the match rules defining at least one matrix transformation between the hierarchical nodes of the respective pair, application of the matrix transformation to the members of the hierarchical nodes of the respective pair defining a resulting set of primitive nodes and primitive edges, where a first one of the number of match rules defines a first matrix transformation between the first and the second hierarchical nodes.

13. (Currently Amended) A system for modeling highly parallel processes that operate on materials or data in which parallel paths undergo reorganizations such as combinations, and, or splitting, the system comprising:

a processor;

a computer-readable memory storing instructions executable by the processor comprising,

a first set of instructions means for creating digital representations of at least two hierarchical nodes, each of the hierarchical nodes having associated therewith a respective dimensionality defining a number of dimensions of the respective hierarchical node, the respective dimensions of each of the

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hierarchical nodes having a defined order with respect to one another, each dimension having an associated size defining a number of members of the respective dimension;

a second set of instructions means for creating digital representations of a number of hierarchical edges defining connections between at least some of the hierarchical nodes, at least a first one of the hierarchical edges defining a connection between a first and a second one of the at least two hierarchical nodes; and

a third set of instructions means for associating at least one of a number of match rules with a pair of hierarchical nodes for each of a number of pairs of hierarchical nodes connected by a respective shared one of the hierarchical edges, each of the match rules defining at least one matrix transformation between the hierarchical nodes of the respective pair, application of the matrix transformation to the members of the hierarchical nodes of the respective pair defining a resulting set of primitive nodes and primitive edges, where a first one of the number of match rules defines a first matrix transformation between the first and the second hierarchical nodes.

14. (Cancelled).

24. (Currently Amended) A method executing on a processor employing high level constructs in the form of hierarchical nodes and hierarchical edges defining directed connections between the hierarchical nodes to represent low level details of a process flow in the form of primitive nodes and primitive connections between the primitive nodes, the method comprising: for each of a

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number of hierarchical nodes, automatically creating a number of primitive nodes to at least partially fill at least one Cartesian dimension of the respective one of hierarchical nodes; and automatically creating of a number of primitive edge connections between the automatically created primitive nodes based on a match rule associated with a connected pair the hierarchical nodes, the match rule defining at least one matrix transformation between the hierarchical nodes of the connected pair of hierarchical nodes.

***Allowable Subject Matter***

The following is an examiner's statement of reasons for allowance:

As per claim 1, 13, 17, it is known in the prior art to create representations of flow processes, the prior art fails to teach generating graphical representations of primitive nodes and edges and associating a set of match rules with primitive nodes and edges, in which the match rules graphically define a matrix transformation, the claims are allowable for these reasons in combination of the other limitations in the claim.

As per claim 24, it is known in the prior art to create representations of flow processes, the prior art fails to teach automatically generating representations of primitive nodes and edges and associating a set of match rules with primitive nodes and edges, in which the match rules automatically

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define a matrix transformation, the claims are allowable for these reasons along with the combination of the other limitations in the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan F. Pitaro whose telephone number is 571-272-4071. The examiner can normally be reached on 7:00am - 4:30pm Monday-Thursday, and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kristine Kincaid can be reached on 571-272-4063. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ryan Pitaro  
Patent Examiner  
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RFP